

The Office of Environment, Safety and Health and its Office of Nuclear and Facility Safety (NFS) publishes the Operating Experience Weekly Summary to promote safety throughout the Department of Energy (DOE) complex by encouraging feedback of operating experience and encouraging the exchange of information among DOE nuclear facilities.

The Weekly Summary should be processed as an external source of lessons-learned information as described in DOE-STD-7501-96, *Development of DOE Lessons Learned Programs*.

To issue the Weekly Summary in a timely manner, the Office of Operating Experience Analysis and Feedback (OEAF) relies on preliminary information such as daily operations reports, notification reports, and, time permitting, conversations with cognizant facility or DOE field office staff. If you have additional pertinent information or identify inaccurate statements in the summary, please bring this to the attention of Dick Trevillian, 301-903-3074, or Internet address [dick.trevillian@hq.doe.gov](mailto:dick.trevillian@hq.doe.gov), so we may issue a correction.

Internet addresses provided in the Weekly Summary will be formatted as lower-case alphabetical characters. Numerical characters will be specifically defined when used in Internet addresses. The Internet Uniform Resource Locator (URL) for the Weekly Summary is [http://www.tis.eh.doe.gov/web/oeaf/oe\\_weekly/oe\\_weekly.html](http://www.tis.eh.doe.gov/web/oeaf/oe_weekly/oe_weekly.html). If you experience difficulties accessing the Weekly Summary at this URL, please contact Mark Mortensen at 208-525-3753 for assistance.

*Readers are cautioned that review of the Weekly Summary should not be a substitute for a thorough review of the interim and final occurrence reports.*

# Operating Experience Weekly Summary 97-01

*December 27, 1996 through January 2, 1997*

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## EVENTS

### 1. MELTER BREACH CAUSES FIRE AT VITRIFICATION PILOT PLANT

On December 26, 1996, at the Fernald Environmental Management Project Vitrification Pilot Plant, a fire occurred when molten glass leaked from a melter and spilled onto a concrete floor covered with epoxy. A maintenance supervisor, investigating a report of smoke, entered the vitrification pilot plant melter room and noticed a small stream of molten glass flowing from the bottom of the melter into a drain container. The supervisor notified fire and safety personnel by radio, stating there was smoke in the melter room but no fire. As the glass stream flowed from the melter, the hole widened from pencil-sized to approximately 2 inches in diameter. A small portion of the glass was diverted onto an epoxy-coated concrete floor where it ignited. Emergency response members put out the fire by coating the floor with water. Unexpected conditions often occur during startup testing of new designs. It is important to be alert for potential unexpected evolutions and to take appropriate actions to mitigate potential consequences. (ORPS Report OH-FN-FDF-FEMP-1996-0075)

Investigators determined that operators were using surrogate materials in the melter to test and develop vitrification technologies. The material contained concentrations of barium and lead, but it was not radioactive. After an operator saw a wisp of smoke in a viewing camera, the system engineer sent the maintenance supervisor to investigate. When the shift supervisor learned of the leak, he directed the control room operator to initiate an emergency shutdown of the melter and ordered evacuation of all building personnel. Investigators determined that approximately 1 cubic yard of surrogate material leaked from the melter. They found that emergency procedures were followed and personnel responded properly. The cause of the melter breach is currently being investigated.

Operating Experience Analysis and Feedback engineers reviewed the Occurrence Reporting and Processing System and found eight events related to glass or vitrification melters. The root cause reported for five events was a design problem; one event was attributed to personnel error. The following two events resulted in burned insulation and melted rubber.

- On November 5, 1996, at the Oak Ridge K-25 Site, operators reported smoke coming from the melter module of a transportable vitrification system. Operators contacted the fire department. Fire fighters applied water to stop the flow of glass from the melter, eliminating the source of smoke and steam. Fire department personnel determined that molten glass had flowed onto rubber water hoses and electrical cables. This generated the smoke and steam in the area. Investigators found that an excessive gap between two refractory blocks on the melter allowed molten glass to flow outside the containment provided by the melter. Features designed to minimize these gaps were not adequate. (ORPS Report ORO--LMES-K25WASTMAN-1996-0003)
- On December 5, 1996, at the Savannah River Site, the melter at the Reactor Materials Facility discharge chute became clogged and forced the molten glass onto the roller/cutter and conveyor. Molten glass built up on the conveyor and came in contact with the conveyor's rubber boot. Heat from the glass caused the boot to catch on fire. Fire fighters used water to extinguish the fire and stop the flow of glass. No injuries were caused by the fire. The cause of this event is still under investigation. (ORPS Report SR--WSRC-RMAT-1996-0008)

These events illustrate the importance of planning for unexpected evolutions when dealing with emerging technologies such as vitrification. Several vitrification designs are used across the DOE complex. NFS advocates sharing of information through user groups and list servers. OEAF has developed a *Hazard and Barrier Analysis Guidance Document*. It provides a set of simple, straightforward tools to devise more effective strategies for preventing and evaluating accidents and accident precursors that have occurred across the DOE complex. A copy is available from Richard Trevillian, (301) 903-3074. Managers and supervisors should review the guide and incorporate hazard and barrier analyses in work and operation processes.

**KEYWORDS:** design, fire, melter, vitrification

**FUNCTIONAL AREAS:** fire protection, industrial safety, research and development

## 2. DIESEL LUBRICATING OIL INCOMPATIBLE WITH LOW-SULFUR FUEL OIL

On December 19, 1996, the Nuclear Regulatory Commission (NRC) issued Information Notice 96-67, "Vulnerability of Emergency Diesel Generators to Fuel/Lubricating Oil Incompatibility." The notice describes degradation of two diesel engines at a commercial nuclear power plant. The degradation resulted from using lubricating oil that was incompatible with low-sulfur fuel oil. Test engineers found the degradation during pre-operational testing of a new safety-related emergency diesel generator. The problem cost the utility time and money in diagnosis and repair and, if it had gone undetected, could have disabled safety-related equipment.

In December 1995, during pre-operational full-load testing of the new diesel generator, test engineers noticed sporadic spikes in the engine crankcase pressure and found lubricating oil seeping from the crankshaft seal. They shut down the engine and performed a boroscopic inspection. One cylinder showed indications of abnormal wear. Maintenance workers replaced the cylinder liner, piston, and piston rings with a spare set. The engineers completed the full-load testing without further incident.

In January 1996, maintenance workers performed a scheduled disassembly inspection on the same engine. They found that all cylinders, including the replacement cylinder, had some degree of degradation. As a result, they inspected a non-safety diesel generator that had been installed in 1995 as a backup power supply in case of station blackout. One cylinder on the station blackout diesel exhibited degradation similar to that found in the safety-related diesel. Upon disassembly, the workers found excessive carbon deposits in all cylinders.

Utility managers assembled a team to determine the root cause of the degradation. The team determined the lubricating oil was incompatible with the type of fuel oil being used. The lubricating oil contained an additive package intended to neutralize fuel oil combustion products, including sulfuric acid, to prevent engine corrosion. The engine manufacturer originally recommended an American Petroleum Institute (API) CD-grade, synthetic lubricating oil. Their recommendation was based, in part, on a fuel oil procurement specification that required a maximum sulfur content of 0.3 percent. In early 1995, the fuel oil supplier switched to an oil with a maximum sulfur content of 0.05 percent to meet new Environmental Protection Agency requirements intended to reduce sulfuric acid emissions. The lower sulfur content in the fuel allowed more unreacted additive in the lubricating oil. This eventually formed carbon deposits. Deposits built up behind the piston rings, forcing them to extrude and contact the cylinder liner wall, resulting in scuffing.

After utility workers rebuilt the diesels, they switched to an API CG-4 grade, mineral-based, lubricating oil. Utility engineers believe that using the mineral-based oil will eliminate excessive

carbon deposits and will result in less clogging of the lubricating oil filters. Synthetic oils contain additives to improve additive solubility. In diesel engines with low lubricating oil sump temperatures, water may accumulate in the sump because the temperature is too low for vaporization. The water can cause hydrolysis of the additives, and the resulting acids react with calcium in the additive to form insoluble compounds. These compounds may clog filters and degrade diesel engine performance.

The NRC information notice illustrates the need for personnel to closely monitor diesel generator performance and evaluate changes to support systems, such as type, brand, and chemical composition of fuel and lubricating oils. NFS reported problems with diesel fuel oil in Weekly Summaries 92-29, 93-10, 93-12, 94-29, and 95-41. Weekly Summary 94-29 reported the failure of a Rocky Flats fuel oil transfer pump impeller because it was incompatible with the emergency diesel fuel oil. Rocky Flats engineers determined that the impeller was composed of a nitrile compound that was not recommended for diesel fuel oil service. Corrective actions included ensuring that all similar pumps are supplied with compatible impellers. (ORPS Report RFO-EGGR-ANALYTOPS-1994-0065)

NFS issued Safety Notice DOE/EH-0389 94-01, "Contamination of Emergency Diesel Generator Fuel Supplies," in July 1994. The notice reported on problems with fuel oil and potential effects on diesel generators. The notice provides recommendations for procurement, storage, and sampling of fuel. Safety Notice 94-01 can be obtained by contacting the Info Center, (301) 903-0449, or by writing to ES&H Information Center, U.S. Department of Energy, EH-74, Suite 100, Century XXI, Third Floor, Germantown, MD 20874.

The DOE Backup Power Working Group has developed a handbook for proper maintenance of diesel generators and subsystems. The chapter, "Guidelines and Practices for the Design, Procurement, Storage, Handling, and Testing of Diesel Fuel Oil to be Used in DOE Backup Power Supplies (U)," provides useful information.

A representative of the working group commented that trend analysis of critical engine parameters and periodic visual box inspections are frequently used to prevent serious engine damage. Critical parameters to monitor include crankcase vacuum/pressure, exhaust temperature, individual cylinder firing pressures, jacket water temperature rise across the engine, and lubricating oil analysis.

Chemical and physical lubricating oil analyses are available through most commercial analytical laboratories. Such analyses will provide useful information to the engine owner on amounts of fuel soot, moisture, acid buildup, and fuel oil dilution; viscosity changes; and additive depletion. Spectroscopic analysis can determine the concentrations of wear metals and dirt in engine oils. High wear rates that may indicate component failure become readily apparent once the normal wear trend is established. Abnormal cylinder and piston ring wear, for example, would be indicated by higher elemental iron and chromium concentrations in the oil.

For additional information on the handbook, contact John Fredlund, (301) 903-3059.

Copies of NRC information notices may be obtained from the NRC Public Document Room, (202) 634-3273. NRC information notices, bulletins, and generic letters are also available on the Fedworld Bulletin Board System. The system is accessible through a modem by dialing (800) 303-9672 (N-8-1, 9600 baud). Additional information on Information Notice 96-67 is available from Kirke Lathrop, NRC Region I, (410) 586-2626.

**KEYWORDS:** diesel generator, fuel oil

**FUNCTIONAL AREAS:** mechanical maintenance, chemistry, procurement

## **PRICE-ANDERSON AMENDMENTS ACT (PAAA) INFORMATION**

### **1. PRELIMINARY NOTICE OF VIOLATION FOR RADIOLOGICAL NON-COMPLIANCES**

On December 18, 1996, the DOE Office of Enforcement and Investigation issued a Preliminary Notice of Violation under the Price-Anderson Amendments Act to Petsco and Son, Inc., a general contractor to Brookhaven National Laboratory (BNL), for potential radiological non-compliances. The office also issued an Enforcement Letter to BNL. These potential non-compliances involved a number of instances of contractor or subcontractor failure to: (1) comply with area radiological warning signs, (2) use protective clothing and equipment, (3) maintain radiation exposures as low as reasonably achievable, and (4) complete radiological worker training. The maximum exposures from the non-compliances were 40 mrem each for two individuals; however, the exposures were unplanned and preventable. [NTS Report NTS-CH-BH-BNL-PE-1996-0001; letter, DOE (T. O'Toole) to Brookhaven National Laboratory (N. Samios), 12/18/96]

On May 22, 1996, BNL management reported four instances of general contractor and subcontractor non-compliance to DOE through the Non-compliance Tracking System (NTS). The Office of Enforcement and Investigation conducted an on-site investigation on August 13-15, 1996. Following the investigation, the enforcement staff concluded that non-compliances with 10 CFR Part 835 requirements occurred. Specific non-compliances occurred in posting, radioactive contamination control and monitoring, radiological safety training for radiological workers, and design and control (as low as reasonably achievable) requirements. The reported incidents of contractor and subcontractor non-compliance were as follows.

- On January 29, 1996, two subcontractor personnel removed the yellow and magenta radiological rope from a fence post without authorization, effectively unposting the area. They also entered the site while wearing expired contractor badges.
- On March 14-23, 1996, two contractor air conditioning technicians worked in an equipment room posted "Radiation Area," with a sign indicating "Film Badge Required." They did not wear thermoluminescent dosimeters and had not received radiation worker I training.
- On March 26, 1996, two subcontractor personnel removed a yellow and magenta radiological area rope bearing the radiological warning "Radiation Area." The rope provided a barricade for radiation fields generated by the alternating gradient synchrotron. The subcontractors proceeded into the radiation area to perform a paving operation.
- On April 3, 1996, a safety officer for the general contractor entered a posted radiological area without authorization and without proper protective clothing.

BNL management proposed several corrective actions, including: (1) providing refresher training in radiation protection for plant engineering engineers, designers, and field personnel who supervise contractors and subcontractors; (2) holding a meeting for BNL construction contractors that will include coverage of 10 CFR 835 requirements; (3) revising lesson plans for contractor

orientation training to include more detailed instruction regarding radiological postings; and (4) developing policy on managing construction activities in radiological areas.

DOE would normally consider an enforcement action for violations of this nature; however, DOE recognized that BNL field staff interceded when subcontractor personnel failed to adhere to established requirements. BNL management viewed the repeated contractor and subcontractor failures to comply with radiological requirements as a programmatic failure and took appropriate corrective actions.

NFS reported assessments of civil penalties for radiation protection violations under the Price-Anderson Amendments Act in Weekly Summaries 96-30 and 96-43. On July 18, 1996, DOE assessed the Westinghouse Hanford Company of Richland, Washington, \$37,500 because a pipefitter at the Hanford Tank Farms received a 13 rem radiation dose to his hands while removing a highly contaminated thermocouple from a high-level radioactive waste storage tank. (ORPS Report RL--WHC-TANKFARM-1996-0017) On October 7, 1996, DOE assessed both Kaiser-Hill Company, the integrating contractor at Rocky Flats, and Safe Sites of Colorado Company, a subcontractor to Kaiser-Hill, \$37,500 because radiological operations were performed contrary to radiation work permit requirements. These operations resulted in a release of radioactive material exceeding 1 million dpm/100 cm<sup>2</sup> and an uptake that was 8 percent of the DOE annual dose limit. (ORPS Reports RFO--KHLL-SOLIDWASTE-1996-0022 and RFO--KHLL-771OPS-1996-0063)

The Price-Anderson Amendments Act subjects DOE contractors to civil penalties for violations of DOE rules, regulations, and compliance orders relating to nuclear safety requirements. The Office of Enforcement and Investigation may reduce a base civil penalty by up to 100 percent when a DOE contractor promptly identifies a violation, reports it to DOE, and undertakes timely corrective action. Additionally, the enforcement policy allows DOE discretion to choose not to issue a notice of violation in certain cases. The Non-compliance Tracking System (Weekly Summaries 95-17, 95-20) provides a means for contractors to promptly report potential non-compliances and take advantage of provisions in the enforcement policy.

**KEYWORDS:** radiation protection, ALARA, enforcement, Price-Anderson Act

**FUNCTIONAL AREAS:** radiation protection

## **NOTICES UNDER DEVELOPMENT**

*The Office of Nuclear and Facility Safety encourages input related to the development of Notices. If you have any questions, comments, or information concerning events or issues similar to the following, please contact Mr. Dick Trevillian, Office of Nuclear and Facility Safety at (301) 903-3074 or at Internet address [dick.trevillian@hq.doe.gov](mailto:dick.trevillian@hq.doe.gov).*

OEAF is currently developing Safety Notices on the following issues:

1. Water Hammer
2. Excavation Safety

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EXCESSIVE STEAM USED DURING HEADER WARM-UP  
THREE PIPE RESTRAINTS FOUND INOPERABLE  
DEFICIENCIES IDENTIFIED IN RESPONSE TO SMOLDERING BREAKER  
UNTRAINED VISITOR REMOVES ANTI-CONTAMINATION GLOVES DURING TOUR

**96-21**

UNINTERRUPTIBLE POWER SUPPLY BATTERY FAILURES  
LIGHTNING CAUSES ELECTRICAL POWER LOSS AND ALARM FAILURES  
VIOLENT CHEMICAL REACTION AT LABORATORY  
DICYCLOPENTADIENE VAPOR ENTERS OFFICES THROUGH BUILDING VENTILATION  
PROCESS AIR PIPING REMOVED WITHOUT ADEQUATE LOCKOUT/TAGOUT  
SUBCONTRACTOR SHOCKED WHILE EXCAVATING WITH A STEEL ROD  
TRANSFORMER SHORT CIRCUITS WHEN USED AS WORK PLATFORM

*NOTICE TO OE BULLETIN BOARD USERS*

SHUTDOWN OF OPERATING EXPERIENCE BULLETIN BOARD

**96-22**

WRONG RADIATION PROBE REMOVED FOR CALIBRATION  
ERRORS IN MODIFICATION DESIGN AND TESTING RESULT IN OIL SPILLS  
SILICA TUBES EXPLODE IN FURNACE AT IOWA LABORATORY  
INOPERABLE DETECTORS VIOLATE OPERATIONAL SAFETY REQUIREMENT  
AIR TRANSPORT REGULATION NON-COMPLIANCES  
LEAKING CANISTERS OF LITHIUM METAL AT Y-12 SITE  
OXYGEN DEFICIENCY IN AIR-SUPPLIED SUITS  
GENERAL ELECTRIC 4-KV BREAKER LATCH PROBLEM

**96-23**

RADIOACTIVE PARTICLE CARRIED OFFSITE  
UNCHARACTERIZED WASTE IMPROPERLY HANDLED  
WORKER RECEIVES BURNS FROM ACID WHILE FLUSHING ACID PIPING  
GASEOUS IGNITION IN SPENT FUEL CASK  
WRONG PUMP DISCONNECT SWITCH OPENED AND LOCKED  
REPLACEMENT AIR CONTROLLER NOT CALIBRATED  
POTASSIUM FOUND IN UNSAFE CONDITION DURING INVENTORY  
VAPOR FROM IMPROPERLY DISPOSED GASOLINE CAUSES EVACUATION

**96-24**

UNREVIEWED SAFETY QUESTION ON CRITICALITY ACCIDENT ALARM SYSTEM  
WATER IN TRANSFORMER CAUSES SHORT CIRCUIT  
EQUIPMENT ALIGNMENT STATUS NOT VERIFIED AND IMPROPER SHIFT TURN OVER  
LACK OF MATERIALS CONTROLS IDENTIFIED  
IMPROPER RADIOLOGICAL CONTROLS RESULTS IN SKIN CONTAMINATION  
PROCEDURE VIOLATION RESULTS IN INJURY

**96-25**

SHUTDOWN OF STACK SAMPLING SYSTEM VIOLATES OPERATIONAL SAFETY REQUIREMENT  
STACKED DRUMS VIOLATE CRITICALITY SAFETY REQUIREMENTS  
UNAUTHORIZED WORK PERFORMED IN A RADIATION AREA  
ELECTRICAL CONTRACTOR MOVES ENERGIZED 13.2 KV CABLES  
NONCOMPLIANCE WITH FEDERAL MOTOR CARRIER SAFETY REGULATION FOR DRIVER QUALIFICATION  
ANTI-CONTAMINATION CLOTHING CONCERNS IN HOT WEATHER  
DILLON DYNAMOMETER FAILS

*OEAF ACTIVITY*

REQUEST FOR SUBJECT MATTER EXPERTS

**96-26**

MISLABELED EQUIPMENT RESULTS IN NEAR MISS DURING PREVENTIVE MAINTENANCE  
GLOVEBOX GLOVE FAILURE RESULTS IN CONTAMINATION  
LOCKOUT/TAGOUT REMOVED WITHOUT AUTHORIZATION  
HANFORD AND FERNALD STREAMLINE MAINTENANCE PLANNING  
COMPRESSED GAS CYLINDER HANDLING PROBLEMS  
WORKERS CLIMB STACK WITHOUT PERMIT OR PROPER FALL PROTECTION  
EXCLUSION AREA VIOLATED DURING HIGH EXPLOSIVES MACHINING

**96-27**

BUILDINGS IN EVACUATION ZONES FOUND WITHOUT CRITICALITY ACCIDENT ALARMS  
CRITICALITY ALARM SYSTEM VIOLATION DURING PREVENTIVE MAINTENANCE

**96-27 continued**

INADEQUATE LOCKOUT/TAGOUTS  
PRESSURE OSCILLATIONS CAUSE REACTOR TRIP  
AIR AND OIL MIXTURE IGNITES DURING AIR COMPRESSOR START UP  
LESSONS LEARNED FROM THE IDAHO FALL FATALITY

**96-28**

AS-FOUND CONDITION RESULTS IN UNREVIEWED SAFETY QUESTION  
CRITICALITY SAFETY VIOLATION DURING GLOVEBOX CLEANUP  
ONSITE SHIPMENT RESULTS IN CRITICALITY SAFETY VIOLATION  
FLUORESCENT LIGHT/HEAT CAUSE DETERIORATION OF LATEX GLOVES  
EXCAVATOR SEVERS ENERGIZED 480-VOLT CABLE  
REGULATORY AGENCIES MAY IMPOSE FINES FOR VIOLATIONS  
DATA ANALYSIS AND SAMPLING TECHNIQUES USED IN THE WEEKLY SUMMARY  
INACCURATE DRAWINGS CAUSE UNSAFE CONDITIONS

**96-29**

ELECTRICAL SHOCK WHILE WORKING ON MICROWAVE OVEN  
COMBUSTIBLE MATERIAL USE VIOLATES AUTHORIZATION BASIS  
OPERATIONAL SAFETY REQUIREMENTS NOT VERIFIED  
INTERLOCK FAILURE CAUSES DAMAGE TO PRESS  
UNAUTHORIZED WORK ON FAN CONTROLLERS  
RADIOGRAPHER AND CO-WORKER OVEREXPOSED  
DEFENSE PROGRAMS SAFETY INFORMATION LETTERS  
EFFECTIVE USE OF FALL PROTECTION EQUIPMENT  
*FOLLOWUP ACTIVITIES*  
CORRECTION TO WEEKLY SUMMARY 96-08, ARTICLE 1, FATAL FALL AT CONSTRUCTION SITE  
*WORKSHOP ANNOUNCEMENT*  
METROLOGY TECHNICAL STANDARDS WORKSHOP

**96-30**

IMPROPER STORAGE OF URANIUM-BEARING MATERIAL VIOLATES TECHNICAL STANDARDS  
CRITICALITY DETECTORS AND ALARMS NOT INSTALLED  
FAILURE TO UPDATE PRELIMINARY HAZARD ANALYSIS RESULTS IN TITANIUM FIRE  
UNAUTHORIZED CHANGE TO WELDING PLUG CAUSES SHOCK  
KATHENE LEAKS CAUSE POTENTIAL STRUCTURAL CONCERNS AT OAK RIDGE  
UNEXPECTED UPTAKES AT OAK RIDGE  
NONCOMPLIANCE WITH RADIATION WORK PERMIT  
RESPIRATORY PROTECTION NOT USED  
*PRICE-ANDERSON AMENDMENTS ACT (PAAA) INFORMATION*  
CIVIL PENALTY ASSESSED UNDER THE PRICE ANDERSON AMENDMENTS ACT

**96-30 continued***ADDITIONAL INFORMATION ON FOLLOW UP ACTIVITIES*

CORRECTION TO WEEKLY SUMMARY ARTICLE 96-24, ARTICLE 6, PROCEDURE VIOLATION RESULTS IN INJURY

**96-31**

OPERATIONAL SAFETY REQUIREMENT VIOLATED AT HANFORD  
POTENTIAL UNREVIEWED SAFETY QUESTION REGARDING VOLUME OF GAS IN PIPING  
SUBCONTRACTOR NEARLY FALLS THROUGH CANOPY  
IMPROPER TEMPORARY WIRING RESULTS IN STOP WORK ORDER  
INADEQUATE LABELING ON ELECTRICAL EQUIPMENT RESULTS IN POWER LOSS  
IMPROPER POST-MAINTENANCE TESTING OF 10-TON CRANE  
LABORER HITS UNEXPECTED PIPE AND CONDUIT WITH JACKHAMMER  
CRITICALITY CONCERN REGARDING MOISTURE-RETENTION PROPERTIES OF MATERIALS

**96-32**

INCORRECT USE OF AN OPERABILITY INTERPRETATION  
DOE PORTSMOUTH RECEIVES NOTICE OF VIOLATION FROM STATE OF OHIO  
LOCKOUT/TAGOUT REMOVED BEFORE WORK COMPLETED  
NUCLEAR MATERIAL SAFETY LIMIT INFRACTIONS  
ENERGIZED CABLE SEVERED DURING EXCAVATION  
PACKAGING AND TRANSPORTATION INCIDENTS AT DOE FACILITIES  
BREACH OF ELECTRICAL SAFETY  
*FOLLOWUP ACTIVITIES*  
LESSONS LEARNED FROM THE TYPE A INVESTIGATION OF AN ELECTRICAL ACCIDENT

**96-33**

HIGH-RADIATION-AREA DOOR FOUND UNSECURED  
AIR FILTERS CATCH FIRE IN GLOVEBOX  
PROCEDURE VIOLATION RESULTS IN CONTAMINATED WATER SPILL  
ELECTRICIAN INJURED DURING WORK IN ELECTRIC CUBICLE  
SUBCONTRACTOR VIOLATED LOCKOUT/TAGOUT REQUIREMENTS  
ELECTRICIANS FAIL TO VERIFY EQUIPMENT DE-ENERGIZED  
EXPANSION JOINTS DAMAGED DURING HYDROSTATIC TESTING  
*ADDITIONAL INFORMATION ON FOLLOW-UP ACTIVITIES*  
CLARIFICATION TO WEEKLY SUMMARY 96-28, ARTICLE 2, CRITICALITY SAFETY VIOLATION DURING GLOVEBOX CLEANUP

**96-34**

UNREVIEWED SAFETY QUESTIONS CONCERNING FIRE PROTECTION  
NEW CRITICALITY CONCERNS ABOUT RESIDUE STORAGE AT ROCKY FLATS



**96-34 continued**

INADEQUATE PROCEDURE CAUSED DRILL STRING DAMAG  
NO FALL PROTECTION WHILE REMOVING HALON BOTTLES  
RECURRING FALL PROTECTION ISSUES  
RECURRING LOCKOUT AND TAGOUT VIOLATIONS  
DRUM LID MARKED "EXPLOSIVES" FOUND DURING SOIL REMOVAL  
GUEST SHOCKED BY PHOTO-MULTIPLIER TUBE  
TECHNICIAN ENTERS LABORATORY WITH VISIBLE HAZE

*ADDITIONAL INFORMATION ON FOLLOW-UP ACTIVITIES*

CLARIFICATION OF WEEKLY SUMMARY 96-32, ARTICLE 5, ENERGIZED CABLE SEVERED DURING EXCAVATION

**96-35**

WORKERS EXPOSED TO TRITIUM-OXIDE  
CRITICALITY SAFETY COMPENSATORY MEASURES NOT FOLLOWED  
PERSONNEL EXPOSED TO CHLORINE GAS  
CONFINED SPACE ENTRY VIOLATION  
IMPROPER LOCKOUT/TAGOUT OF DC POWER DURING INSTALLATION OF MOTOR CONTROL CENTER  
STOP WORK ORDER ISSUED FOR INADEQUATE SHORING OF AN EXCAVATION  
INADEQUATE FIRE PROTECTION COMPENSATORY ACTION  
POTENTIAL SAFETY CONCERN WHEN LIFTING HIGH INTEGRITY CONTAINERS

**96-36**

LIMITING CONDITIONS FOR OPERATION TIME LIMIT EXCEEDED  
IMMEDIATE ACTIONS NOT PERFORMED FOR ABNORMAL CONDITION  
SURVEYOR USES ALUMINUM ROD CLOSE TO ENERGIZED TRANSFORMER  
CART WITH CORE SAMPLES INCORRECTLY SURVEYED  
FIRE AT FUEL FABRICATION PLANT RESULTS IN CIVIL PENALTY  
*PRICE-ANDERSON AMENDMENTS ACT (PAAA) INFORMATION*  
MOUND SETS EXAMPLE IN RESPONSE TO PRICE-ANDERSON CONTAMINATION CONTROL NONCOMPLIANCE

**96-37**

DRUM MOVEMENT VIOLATES A ROOM POSTING  
WELDING CABLE WITH DAMAGED INSULATION ARCS TO SCAFFOLDING  
INCOMPLETE MAINTENANCE RESULTS IN "NEAR-MISS"  
COMMUNICATIONS FAILURE DELAYS REPAIR OF LIGHT FIXTURE  
FIVE ROOMS FLOODED WHEN RELIEF VALVE LIFTS  
ENERGIZED ELECTRICAL LINE STRUCK DURING EXCAVATION ACTIVITY  
SPECIAL NUCLEAR MATERIALS STORED IN WRONG CONTAINER

**96-38**

CRITICALITY DETECTORS NOT INSTALLED IN MATERIAL STORAGE AREA  
EXTERNAL DOSIMETRY PROCEDURAL VIOLATIONS

**96-38 continued**

EMERGENCY ELECTRIC BUS LOST DURING EMERGENCY DIESEL TEST  
PRESSURIZED CONTENTS OF CHEMICAL WASTE BOTTLE EXPELLED  
UNAUTHORIZED WORK IN A RADIOLOGICAL BUFFER AREA  
VIOLATION OF CONFINED SPACE ENTRY PLAN REGULATIONS  
CARPENTERS ON ROOF WITHOUT FALL PROTECTION  
NUCLEAR REGULATORY COMMISSION TEAM INVESTIGATES SAFETY CONCERNS AT NUCLEAR PLANT  
PROACTIVE REVIEW OF FREEZE PROTECTION PROGRAM

**96-39**

DRUM CONTAMINATION LEADS TO DECLARATION OF "SITE AREA EMERGENCY"  
CONDENSATE-INDUCED WATER HAMMER OCCURRED IN STEAM SYSTEM  
DIESEL GENERATOR DECLARED INOPERABLE BECAUSE ROOF LEAKS  
DISCOVERY OF UNEXPECTED CONTAMINATION DURING EXCAVATION  
DISCOVERY OF PICRIC ACID IN EXPLOSIVE CONDITION  
OPENING WRONG BREAKER RESULTS IN UNPLANNED ELECTRICAL OUTAGE AT ARGONNE NATIONAL  
LABORATORY—WEST  
FALL PROTECTION CONCERNS AND ISSUES  
*FINAL REPORTS*  
ELECTRICIAN SHOCKED DURING PREVENTIVE MAINTENANCE TESTING  
UPDATE ON WATER INTRUSION IN 13.8-KV TRANSFORMER

**96-40**

PROCEDURE VIOLATION DETERMINED TO BE AN UNREVIEWED SAFETY QUESTION  
HYDROGEN GENERATED IN STORAGE TANKS AT ROCKY FLATS  
FOUR RECEIVE UPTAKE AT HANFORD  
PREVENTIVE MAINTENANCE ON WRONG EQUIPMENT RESULTS IN NEAR MISS  
HOISTING AND RIGGING PROBLEMS  
UNEXPECTED CHEMICAL REACTION AT OAK RIDGE  
WATER HAMMER ACCIDENT INJURES SEVEN AT NUCLEAR PLANT

**96-41**

INADEQUATE SURVEILLANCE OF SPECIAL NUCLEAR MATERIAL STORAGE FACILITIES  
RADIOACTIVE CONTAMINATION SPREAD AT TRITIUM FACILITY  
HANFORD FINED BY WASHINGTON STATE FOR FAILURE TO TAKE CORRECTIVE ACTIONS  
WORK OUTSIDE ORIGINAL JOB SCOPE AFFECTS OPERATIONAL SAFETY REQUIREMENT SYSTEMS  
MERCURY CONTAMINATION FOUND IN LABORATORY WORKING AREA  
MINOR ELECTRIC SHOCK FROM ALPHA COUNTER CASE  
INADEQUATE WORK PLANNING RESULTS IN ELECTRICAL SHOCK NEAR MISS

**96-42**

IMPROPERLY WIRED EXTENSION CORD CAUSES ELECTRICAL ARCS  
DRUM LIDS BLOWN OFF WHEN LOCKING RING LOOSENEED  
INADEQUATE ISOLATION OF AIR SYSTEM RESULTS IN NEAR MISS  
TAR KETTLE CATCHES FIRE  
CRANE TIPS AT OAK RIDGE  
HIGH FAILURE RATES IN SAMPLE FLASK ISOLATION VALVES  
BACKHOE SEVERS ELECTRICAL CONTROL WIRING AT WEST VALLEY  
JACKHAMMER STRIKES CONDUIT AT ROCKY FLATS

*OEAF ACTIVITY*

REQUEST FOR GOOD PRACTICES IN EXCAVATION SAFETY

**96-43**

RADIOLOGICAL SAFETY PRACTICES VIOLATE CRITICALITY SAFETY REQUIREMENTS  
POTENTIAL EXPOSURE TO ASBESTOS FROM COOLING TOWER FILTER MEDIA  
NEW LIMIT FOR PLUTONIUM OXIDE STORAGE VIOLATED  
WILDLIFE MANAGEMENT AREA DAMAGED  
ELECTRICIAN INJURED WHILE PERFORMING UNAUTHORIZED WORK

*PRICE-ANDERSON AMENDMENTS ACT (PAAA) INFORMATION*

TWO CIVIL PENALTIES PROPOSED UNDER THE PRICE-ANDERSON AMENDMENTS ACT

**96-44**

TRITIUM RELEASE FROM SEMI-WORKS BUILDING AT MOUND PLANT  
UNCHARACTERIZED HIGH-RADIATION AREA ON HOT CELL ROOF  
MAINTENANCE PERFORMED WITHOUT RADIATION WORK PERMIT  
WORK PLAN REQUIREMENTS NOT FOLLOWED FOR DRUM CHARACTERIZATION  
NUCLEAR MATERIAL SAFETY LIMITS VIOLATED  
OVERHEATED LABORATORY OVEN CAUSES A FIRE  
PRESSURIZED DRUMS FOUND AT MIXED WASTE STORAGE FACILITY

*OEAF FOLLOWUP ACTIVITY*

UPDATE ON POINT-OF-CONTACT FOR WATER HAMMER EVENTS

**96-45**

UNREVIEWED SAFETY QUESTION AT HANFORD  
UNREVIEWED SAFETY QUESTION CONCERNING OPERATOR ACTION VERSUS EVACUATION  
PREVENTIVE MAINTENANCE INSTRUCTIONS SIGNED OFF PREMATURELY  
PIPEFITTER RECEIVES ELECTRICAL SHOCK WHILE REPAIRING A BOILER  
NON-CONSERVATIVE ASSUMPTION RESULTS IN CRITICALITY SAFETY RULE VIOLATION  
SUBCONTRACTOR VIOLATES TAGOUT PROCEDURE  
LOCK AND TAG PROBLEMS AT THE HANFORD SOLID WASTE FACILITY  
SLUDGE SPRAYS WORKERS WHEN PUMP DISCHARGE HOSE IS DISCONNECTED

**96-46**

TECHNICIAN CONTAMINATES SURVEY INSTRUMENT AND HANDS  
ANALYSES REVIEW IDENTIFIES TWO UNREVIEWED SAFETY QUESTION DETERMINATIONS  
MOLTEN SALT REACTOR SPRAYS 700 DEGREE CENTIGRADE SALT  
FORKLIFT ACCIDENT RESULTS IN ELECTRICAL NEAR MISS  
RADIOLOGICAL CONTAMINATION FROM UNREPORTED SPILL  
INADEQUATE JOB PLANNING RESULTS IN PHASE-TO-PHASE TO GROUND FAULT  
PROCEDURE STEP ERROR CAUSES SHUTDOWN OF INCINERATOR

**96-47**

RADIATION STREAMING RESULTS IN UNPOSTED HIGH RADIATION AREA  
UNAUTHORIZED MAINTENANCE DISABLES DIESEL AND EXHAUST FAN  
UNDOCUMENTED MODIFICATIONS CAUSE VENTILATION CONCERNS  
WORK CONTROL FAILURE AT IDAHO NATIONAL ENGINEERING LABORATORY  
SAFETY PROCEDURE VIOLATIONS RESULT IN WORK STAND DOWN  
UNAUTHORIZED TEMPORARY SYSTEM ALIGNMENT

**96-48**

PRESSURIZED DRUM AT THE PADUCAH PLANT  
TWO TECHNICIANS RECEIVE UPTAKES  
INCORRECTLY WIRED POWER CORD CAUSES AN ELECTRICAL ARC  
SECURITY TECHNICIAN STRUCK IN THE EYES BY REFLECTED LASER BEAM  
MISCALCULATION OF OIL TANK WEIGHT RESULTS IN RIGGING INCIDENT  
USE OF INADEQUATE PROCEDURE RESULTS IN PARTIAL LOSS OF PROCESS VENTILATION SYSTEM  
AIR HOSE CONNECTION ON SELF-CONTAINED BREATHING APPARATUS FAILS  
*OEAF ACTIVITY*  
PECO ENERGY COMPANY PERFORMANCE ENHANCEMENT PROGRAM

**96-49**

SECURITY OFFICER VIOLATES RADIOLOGICAL REQUIREMENTS  
IMPROPER MAINTENANCE CAUSES INCINERATOR SHUTDOWN  
RADIATION STREAMING CAUSES AN UNPOSTED HIGH RADIATION AREA  
ELECTRICIANS REPAIR GUTTER HEATERS WITHOUT FALL PROTECTION  
TECHNICAL SPECIFICATION SURVEILLANCE MISSED AFTER SHUTDOWN  
ADMINISTRATIVE CONTROLS INEFFECTIVE IN PREVENTING CRITICALITY VIOLATIONS  
DUMP TRUCKS CONTACT OVERHEAD LINES

**96-50**

FUEL PINS DROP FROM IRRADIATED FUEL SUBASSEMBLY  
VIOLATION OF SITE RADIOACTIVE HANDLING PROGRAM  
DEPLETED URANIUM STORAGE LIMITS EXCEEDED  
TRAINING RECORD REVIEW IDENTIFIES UNQUALIFIED OPERATOR  
INCORRECT TRANSFER SWITCH POSITION RENDERS DIESEL GENERATOR INOPERABLE  
INADEQUATE LOCKOUT/TAGOUT PACKAGE RESULTS IN LIFTING WRONG LEAD  
VENTILATION PROBLEM AT ROCKY FLATS

**96-51**

UNAUTHORIZED MODIFICATION RESULTS IN CRITICALITY SAFETY VIOLATION  
UNREVIEWED SAFETY QUESTION AT Y-12  
TECHNICIAN RECEIVES ELECTRICAL SHOCK WHILE REPAIRING TEST EQUIPMENT  
ELECTRICAL FLASH OCCURS DURING CAULKING APPLICATION  
OFF-GAS COMPRESSOR BLOWER INADVERTENTLY STARTED WITHOUT LUBRICATING OIL  
MECHANICS VIOLATE LOCKOUT/TAGOUT BY REMOVING PIPE  
CONSTRUCTION WORKER INJURED BY FALLING STEEL PLATE

**96-52**

TANK CONTAINING LOW-LEVEL RADIOACTIVE SLUDGE OVERFLOWS  
CONTRACTORS MAKE UNAUTHORIZED ENTRY INTO RADIOLOGICAL BUFFER AREA  
POTENTIAL GLOVEBOX FAILURE FROM POSTULATED COMPRESSED GAS ACCIDENT  
FLOW RESTRICTOR MISSING ON BREATHING AIR MANIFOLD  
EMERGENCY DECLARED WHEN FIRE SYSTEM PIPE BREAKS  
HAZARD INFORMATION BULLETIN WARNS ABOUT PROCESS SAFETY REVIEWS